

Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings, of the claims in the application:

1. (currently amended) A multi-speed ratio apparatus to control output comprising:

a rotary speed converter having at least three rotatable components being operably connected together;

a first component of said at least three rotatable components being an input part to said rotary speed converter, wherein said input part is operably connected to a driving member and said driving member comprises a vehicular transmission;

~~another~~ a second component of said at least three rotatable components being an output part of said rotary speed converter, wherein said output part is operably connected to a drivable member;

a third component of said at least three rotatable components being interposed within said first component and said second component to form a nested configuration of said at least three rotatable components; and

a grounding member being operably connected to a groundable component for selectively grounding said groundable component, wherein said groundable component is at least one of said at least three rotatable components ~~for selectively grounding said at least~~

~~one of said at least three rotatable components; and~~
said at least three rotatable components comprise an inner cam, a
reaction disk, and an outer cam.

2. (currently amended) The apparatus as defined in claim 1, further comprising a housing.

3. (currently amended) The apparatus as defined in claim 2, wherein said groundable component of said at least one of said at least three rotatable components ~~being~~ is grounded to said housing.

4. (canceled)

5. (currently amended) The apparatus as defined in claim 1, ~~wherein said at least three rotatable components comprise an inner cam, a reaction disk and an outer cam;~~ further comprising:

a plurality of slots in said reaction disk; and

a contact member selectively disposed within at least one of said plurality of slots.

6. (currently amended) The apparatus as defined in claim 5, wherein said ~~contacting~~ member comprises a roller.

7. (currently amended) The apparatus as defined in claim 5, wherein said contacting member comprises a bearing.

8. (currently amended) The apparatus as defined in claim 5, wherein said contacting member comprises a roller device.

9. (currently amended) The apparatus as defined in claim 1, wherein:

said input part ~~being~~ is said an inner cam;

said output part ~~being~~ is said a reaction disk; and

said groundable component of said at least one of said at least three rotatable components ~~being~~ is said an outer cam.

10. (currently amended) The apparatus as defined in claim 1, wherein:

said input part ~~being~~ is said a reaction disk;

said output part ~~being~~ is said an inner cam; and

said groundable component of said at least one of said at least three rotatable components is said ~~being~~ an outer cam.

11. (currently amended) The apparatus as defined in claim 1, wherein:

said input part ~~being~~ is said an outer cam;

said output part ~~being~~ is said an inner cam; and

said groundable component of said at least one of said at least three rotatable components ~~being~~ is said a reaction disk.

12. (currently amended) The apparatus as defined in claim 1, wherein:

said input part ~~being~~ is said an inner cam;

said output part ~~being~~ is said an outer cam; and

said groundable component of said at least one of said at least three rotatable components ~~being~~ is said a reaction disk.

13. (currently amended) The apparatus as defined in claim 1, wherein:

said input part ~~being~~ is said a reaction disk;

said output part ~~being~~ is said an outer cam; and

said groundable component of said at least one of said at least three rotatable components ~~being~~ is said an inner cam.

14. (currently amended) The apparatus as defined in claim 1, wherein:

said input part ~~being~~ is said an outer cam;

said output part ~~being~~ is said a reaction disk; and

said groundable component of said at least one of said at least three rotatable components ~~being~~ is said an inner cam.

15-24. (canceled)

25. (currently amended) The apparatus as defined in claim 23 9, wherein:

~~said input part being an inner cam;~~

~~said output part being a reaction disk;~~

~~said groundable component of said at least one of said at least three
rotatable components being an outer cam; and~~

~~said inner cam and said outer cam form a conjugate pair being conjugate.~~

26. (currently amended) The apparatus as defined in claim 23 10, wherein:

~~said input part being a reaction disk;~~

~~said output part being an inner cam;~~

~~said groundable component of said at least one of said at least three
rotatable components being an outer cam; and~~

~~said inner cam and said outer cam form a conjugate pair being conjugate.~~

27. (currently amended) The apparatus as defined in claim 11, ~~23~~ wherein:

~~said input part being an outer cam;~~

~~said output part being an inner cam;~~

~~said groundable component of said at least one of said at least three
rotatable components being a reaction disk; and~~

~~said inner cam and said outer cam form a conjugate pair being conjugate.~~

28. (currently amended) The apparatus as defined in claim 12, ~~23~~ wherein:

~~said input part being an inner cam;~~

~~said output part being an outer cam;~~

~~said groundable component of said at least one of said at least three~~

~~rotatable components being a reaction disk; and~~

said inner cam and said outer cam form a conjugate pair ~~being conjugate.~~

29. (currently amended) The apparatus as defined in claim 13, 23 wherein:

~~said input part being a reaction disk;~~

~~said output part being an outer cam;~~

~~said groundable component of said at least one of said at least three~~

~~rotatable components being an inner cam; and~~

said inner cam and said outer cam form a conjugate pair ~~being conjugate.~~

30. (currently amended) The apparatus as defined in claim 14, 23 wherein:

~~said input part being an outer cam;~~

~~said output part being a reaction disk;~~

~~said groundable component of said at least one of said at least three~~

~~rotatable components being an inner cam; and~~

said inner cam and said outer cam form a conjugate pair ~~being conjugate.~~

31. (canceled)

32. (currently amended) ~~The apparatus as defined in claim 31 wherein the A~~

multi-speed ratio apparatus to control output comprising:

a rotary speed converter having at least three rotatable components being

operably connected together;

a first component of said at least three rotatable components being an
input part to said rotary speed converter, wherein said input part is
operably connected to a driving member and said driving member
comprises an engine;

a second component of said at least three rotatable components being an
output part of said rotary speed converter, wherein said output part
is operably connected to a drivable member;

a third component of said at least three rotatable components being
interposed within said first component and said second component
to form a nested configuration of said at least three rotatable
components;

a grounding member being operably connected to a groundable
component for selectively grounding said groundable component,
wherein said groundable component is at least one of said at least
three rotatable components; and

said at least three rotatable components comprise an inner cam,
a reaction disk, and an outer cam.

33-34. (canceled)

35. (currently amended) ~~The apparatus as defined in claim 31 wherein the A~~
multi-speed ratio apparatus to control output comprising:

a rotary speed converter having at least three rotatable components being

operably connected together;

a first component of said at least three rotatable components being an

input part to said rotary speed converter, wherein said input part is

operably connected to a driving member and said driving member

comprises another rotary speed converter;

a second component of said at least three rotatable components being an

output part of said rotary speed converter, wherein said output part

is operably connected to a drivable member;

a third component of said at least three rotatable components being

interposed within said first component and said second component

to form a nested configuration of said at least three rotatable

components;

a grounding member being operably connected to a groundable

component for selectively grounding said groundable component,

wherein said groundable component is at least one of said at least

three rotatable components; and

said at least three rotatable components comprise an inner cam,

a reaction disk, and an outer cam.

36. (currently amended) The apparatus as defined in claim 1, wherein said output
part being ~~is operably connected to a drivable member~~ is a vehicular axle.

37. (currently amended) The apparatus as defined in claim ~~36~~1, wherein said drivable member ~~being~~ is another rotary speed converter.

38. (currently amended) The apparatus as defined in claim ~~36~~1, wherein the said drivable member comprises a vehicular differential.

39. (currently amended) The apparatus as defined in claim 38, further ~~comprises~~ comprising a housing, wherein ~~and said differential being~~ is contained in said housing.

40. (currently amended) The apparatus as defined in claim 1, wherein said apparatus ~~which~~ is back drivable.

41. (currently amended) The apparatus as defined in claim 1, wherein said apparatus ~~which~~ is non-back drivable.

42 - 43. (canceled)

44. (currently amended) The apparatus as defined in claim 1, wherein said grounding member comprises a brake element.

45. (currently amended) The apparatus as defined in claim 1, wherein said grounding member comprises a clutch.

46. (currently amended) A speed converter for producing rotary motion of a shaft, comprising:

a housing;

a single stage rotary speed converter having a conjugate pair of cam parts and a reaction disk operably interconnected between said conjugate pair of cam parts, wherein said reaction disk is interposed within said conjugate pair of cam parts to form a nested configuration and said single stage rotary speed converter ~~being~~ is contained within said housing;

a first part of said conjugate pair of cam parts comprising an inner cam and an input shaft, said inner cam being drivable by a driving member capable of producing a predetermined input rotary speed, wherein said driving member is a vehicular transmission;

~~another~~ a second part of said conjugate pair of cam parts comprising an outer cam;

said reaction disk ~~includes~~ including a plurality of slots and an output shaft, said reaction disk being capable of operably coupling said conjugate pair of cam parts, wherein said output shaft ~~being~~ is capable of a predetermined output rotary speed and ~~further being~~ capable of driving a drivable member;

a contact member selectively disposed within at least one of said plurality of slots; and

a grounding member operably connected to said outer cam and capable
of selectively grounding said outer cam to said housing.

47. (currently amended) A speed converter for producing rotary motion of a shaft,
comprising:

a housing;

a single stage rotary speed converter having a conjugate pair of cam parts
and a reaction disk operably interconnected between said
conjugate pair of cam parts, wherein said reaction disk is
interposed within said conjugate pair of cam parts to form a nested
configuration and said single stage rotary speed converter being
contained within said housing;

a first part of said conjugate pair of cam parts comprising an inner cam
and an output shaft, said output shaft capable of having a
predetermined output rotary speed and further being capable of
driving a drivable member;

~~another~~ a second part of said conjugate pair of cam parts being an outer
cam;

said reaction disk ~~includes~~ including a plurality of slots and an input shaft,
said ~~slotted~~ reaction disk being capable of operably coupling said
conjugate pair of cam parts, wherein said reaction disk ~~being~~ is
drivable by a driving member capable of ~~having~~ producing a
predetermined input rotary speed, wherein said driving member is a

vehicular transmission;

a contact member selectively disposed within at least one of said plurality
of slots; and

a grounding member operably connected to said outer cam and capable
of selectively grounding said outer cam to said housing.

48. (canceled)

49. (currently amended) A multi-ratio speed converter capable of being operably
connected to a vehicular transmission, said multi-ratio speed converter
comprising:

at least one single stage speed converter having a an input cam, an
output cam, a reaction disk, ~~and~~ a contact member, and a
grounding member operably connected to said outer cam capable
of selectively grounding said outer cam,

wherein said input cam, said output cam, said reaction disk, and said
contact member are all ~~being~~-located on a common axis and ~~being~~
are operably interconnected to each other;

said at least one single stage speed converter ~~being~~ is disposed between
~~the~~ said vehicular transmission and ~~an~~ a vehicular axle;

said input cam and said output cam form a conjugate pair ~~being-conjugate~~
~~to each other~~ and said reaction disk is interposed within said
conjugate pair to form a nested configuration;

said reaction disk ~~has~~ having a plurality of slots, each of said ~~plurality of~~
slots being capable of entraining said contact member therein;
said input cam ~~being~~ is operably connected to the vehicular transmission;
and
said reaction disk ~~being~~ is operably connected to the vehicular axle; and
~~a grounding member operably connected to said outer cam capable of~~
~~selectively grounding said outer cam,~~
whereby a rotational speed applied to said at least one single stage speed
converter by the transmission is capable of being converted to
another rotational speed.

50. (currently amended) The converter as defined in claim 49, wherein said at
least one single stage converter is capable of being set to a predetermined
speed ratio.

51. (currently amended) The converter as defined in claim 49, further comprising
a plurality of ~~said at least one~~ single stage speed converters, wherein each said
single stage speed converter is ~~being~~ operably connected to another single stage
speed converter and disposed between the transmission and the axle.

52-56. (canceled)

57. (new) The apparatus as defined in claim 1, wherein said drivable member comprises a transfer case.
58. (new) The apparatus as defined in claim 1, wherein said vehicular transmission is part of an all-wheel drive vehicle.
59. (new) The apparatus of claim 9, wherein when said input part and said output part rotate clockwise, the speed ratio is 2.8 to 1.
60. (new) The apparatus of claim 10, wherein when said input part and said output part rotate clockwise, the speed ratio is 0.36 to 1.
61. (new) The apparatus of claim 11, wherein when said input part rotates clockwise and said output part rotates counterclockwise, the speed ratio is 0.56 to 1.
62. (new) The apparatus of claim 12, wherein when said input part rotates clockwise and said output part rotates counterclockwise, the speed ratio is 1.8 to 1.
63. (new) The apparatus of claim 13, wherein when said input part and said output part rotate clockwise, the speed ratio is 0.64 to 1.

64. (new) The apparatus of claim 14, wherein when said input part and said output part rotate clockwise, the speed ratio is 1.56 to 1.